

Work Order ID 83120

April-13-12 7:30:55 AM

83120

Page 1

Item ID: D4617-041

Accept

N9000040100

Setup Start *NS1*

Revision ID:

Stop *NS2*

Item Name: Emergency Escape Ladder

Start Date: 13/04/2012 Start Qty: 1.00

1

Cust Item ID:

Required Date: 20/04/2012 Req'd Qty: 1.00

1

Customer:

Reference:

Approvals:

Process Plan: MLJ

Date: 12/04/13

Tooling:

Date:

Run Start *NR1*

QC:

Date:

SPC (Y/N):

Date:

Stop *NR2*

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
Draw Nbr	Revision Nbr								
D4617	A								

100 Weld per dwg A/R 4130 rod Batch: M118875 0.00

100

Large Fab

Memo

0.00

Large Fab

1 12-4-19

110

QC9- Inspect visual per QSI004- Fusion Welds

0.00

110

QC

Memo

0.00

Quality Control

12-04-19

120

QC5- Inspect part completeness to step on W/O

0.00

120

QC

Memo

0.00

Quality Control

tester / not to original

Signature

12-04-19

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Work Order ID 83120

83120

Page 2

April-13-12 7:30:55 AM

Item ID: D4617-041 Accept *N900040100* Setup Start *NS1*
 Revision ID: Stop *NS2*
 Item Name: Emergency Escape Ladder
 Start Date: 13/04/2012 Start Qty: 1.00 *1* Cust Item ID:
 Required Date: 20/04/2012 Req'd Qty: 1.00 *1* Customer:
 Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____ Run Start *NR1*
 QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop *NR2*

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
130	Pressure Wash per QSI005 4.3	0.00							
130	HandFinish	0.00							
Hand Finishing	Memo N/A								
140	Fire Red(Ref:4.3.5.10) per QSI005 4.3	0.00							
140	Powdercoat	0.00							
Powder Coating	Memo 12:45 START TIME: 3200F OVEN TEMPERATURE: 1:15 FINISH TIME:								
150	QC3- Inspect Part Finish	0.00							
150	QC	0.00							
Quality Control	Memo								

MU3645

IX 12/04/12

1 x d unbolto

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

83120

Page 3

Accept

N900040100

Setup Start *NS1*

Stop *NS2*

Start Date: 13/04/2012 **Start Qty:** 1.00

*** 1 ***

Cust Item ID:

Required Date: 20/04/2012 **Req'd Qty:** 1.00

*** 1 ***

Customer:

Reference:

Approvals: **Process Plan:** _____ **Date:** _____ **Tooling:** _____ **Date:** _____

Run Start *NR1*

QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Stop *NR2*

160

0.00

160

0.00

HandFinish

Memo

Hand Finishing

- 1- Assemble clamps, clamps cover and tube caps to ladder as per dwg
- 2- Install decals, as per dwg

170

QC5- Inspect part completeness to step on W/O

0.00

170

0.00

QC

Memo

Quality Control

180

Identify as per dwg & Stock Location:

0.00

180

0.00

Packaging

Memo

Packaging

W/O:		83172						WORK ORDER CHANGES	
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector		

Part No: D4617-041 PAR #: _____ Fault Category: Eng. design NCR: Yes No DQA: Not Date: 12/5/14
 Resolution: Rework Disposition: Rework QA: N/C Closed: OK Date: 12/5/14

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			
12/5/14	#160	After trial test fit it was found that the Ladder does not fit. Re Drawing is in correct	MD 12/5/1	→ Cut + Remove both TOP + Bottom Run. D4617-3	EL 12-5-1	S, 12/5/14	MD 12/5/1	S 12/5/14
				→ Grind Flux all weld left over.	EL 12-5-1	S, 12/5/14		
			MD 12/5/1	→ Re part it to measure 75.500 out size to outside (max 1/4" crack in welds).	EL 12-5-1	S, 12/5/14	MD 12/5/1	S 12/5/14
				→ Re part Track + Have inspectors Re for welds	EL 12-5-1	S, 12/5/14		
			MD 12/5/1	→ Re weld as per AS2004 D4617-3 B 12/250 2h x 2	EL 12-5-1	S, 12/5/14	MD 12/5/1	S 12/5/14
				test fit by as. 12-5-02	MD 12-5-02	S, 12/5/14		

NOTE: Date & initial all entries

Work Order ID 83120***83120***

Page 4

April-13-12 7:30:55 AM

Item ID: D4617-041

Accept

N9000040100Setup Start ***NS1***

Revision ID:

Stop ***NS2***

Item Name: Emergency Escape Ladder

Start Date: 13/04/2012 Start Qty: 1.00

1

Cust Item ID:

Required Date: 20/04/2012 Req'd Qty: 1.00

1

Customer:

Reference:

Approvals:

Process Plan: _____

Date: _____

Tooling: _____

Date: _____

Run Start ***NR1***

QC: _____

Date: _____

SPC (Y/N): _____

Date: _____

Stop ***NR2***Sequence ID/
Work Center IDOperation
DescriptionSet Up/
Run Hours

Tool ID

Tool #

Plan
CodeAccept
QtyReject
QtyReject
NumberInsp.
Stamp

190

QC21- Final Inspection - Work Order Release

0.00

190

QC

Memo

0.00

Quality Control

MLW 12/05/04
MLW 12/05/04

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

April-13-12 7:30:59 AM

83120

D4617-041

Required Date: 20/04/2012

Required Qty: 1.00

Comments: IPP REV:A 12.04.12 NEW ISSUE DD VERF:EC

[illegible]

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

ITEM	QTY -041	P/N	DESCRIPTION
	X	D4617-041	EMERGENCY ESCAPE LADDER
1	1	D4617-043	LADDER WELDMENT
2	4	D4617-045	CLAMP ASSY
3	4	D4618-041	CLAMP ASSY COVER
4	2	D4621-1	DECAL
5	1	D4621-3	DECAL
6	4	D4625-1	TUBE CAP

D4617-045
CLAMP ASSEMBLY
4 PL

D4618-041
CLAMP ASSY COVER
4 PL
(SHOWN REMOVED THIS LOCATION)

D4617-043
LADDER WELDMENT

SHOP COPY
RETURN TO
ENGINEERING
UNCONTROLLED COPY
SUBJECT TO AMENDMENT
WITHOUT NOTICE
WORK ORDER
NO. 83120 MCV
12/04/13

D4625-1
TUBE CAP
4 PL

(CLAMP ASSY COVERS REMOVED FOR CLARITY)

D4621-3
DECAL

D4621-1
DECAL
2 PL

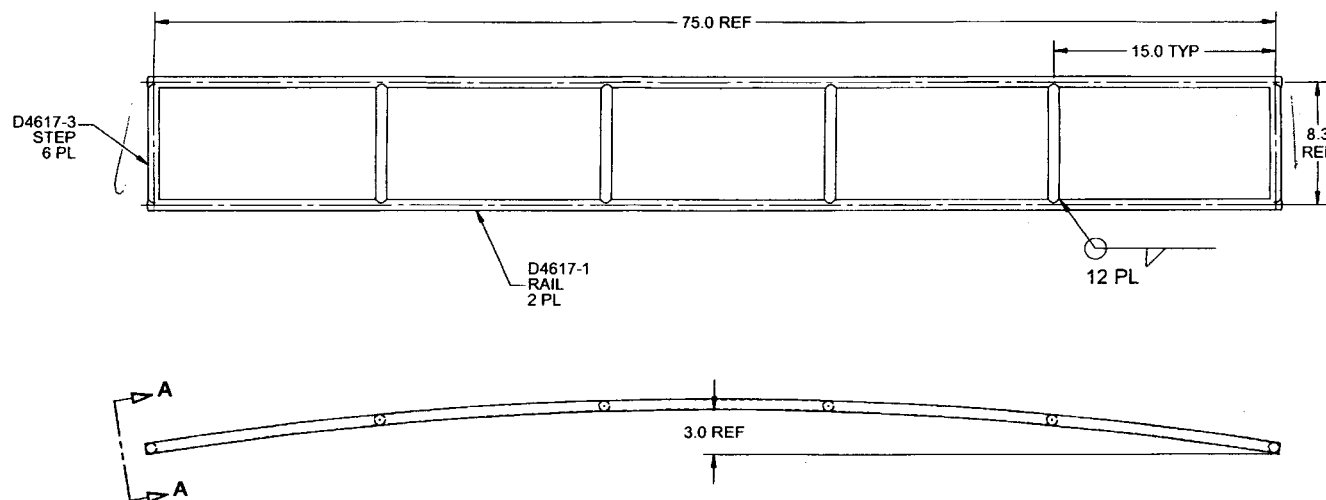
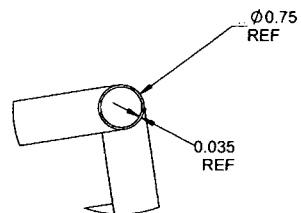
D4617-041 EMERGENCY ESCAPE LADDER

NOTES:

- 1) MATERIAL: N/A
- 2) FINISH: N/A
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
- 6) IDENTIFICATION: IDENTIFY WITH DART P/N "D4617-041" AND BATCH NUMBER PER QSI044 6.6
- 7) WEIGHT: 6.46 lbs

A	NEW ISSUE	RP	12.04.02
REV.	DESCRIPTION	BY	DATE
DESIGN	RP	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
DRAWN	RP		
CHECKED	AD	DRAWING NO.	REV. A
MFG. APPR.	AD	D4617	SHEET 1 OF 5
APPROVED	AD	TITLE	SCALE
DE APPR.	AD	EMERGENCY ESCAPE LADDER	NTS
DATE	12.04.02	COPYRIGHT © 2012 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR DISSEMINATED TO ANY OTHER PERSON WITHOUT IT WRITTEN PERMISSION FROM DART AEROSPACE LTD.	

03120



D4617-043 LADDER WELDMENT

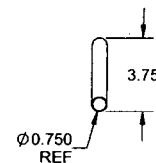
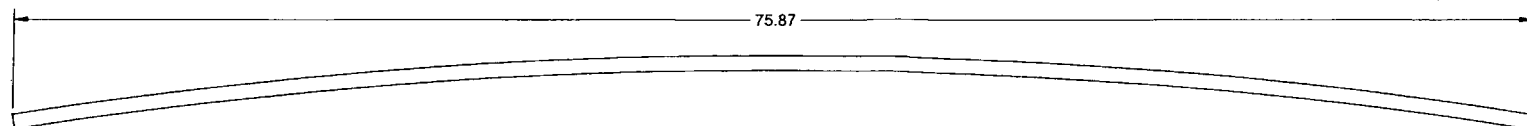
RELEASED
2012-04-18

NOTES:

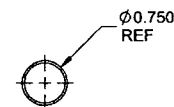
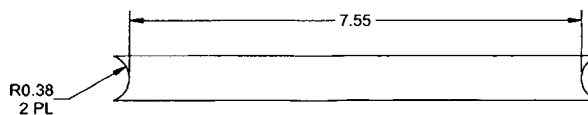
- 1) MATERIAL: N/A
- 2) FINISH: POWDER COAT FIRE RED (4.3.5.10) PER DART QSI 005 4.3
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
- 6) IDENTIFICATION: PER DART QSI 044 6.6
- 7) WEIGHT: 4.5 lbs
- 8) WELDING: PER DART QSI 004

DESIGN	RP	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
DRAWN	RP		
CHECKED	A. J.	DRAWING NO. D4617	REV. A
MFG. APPR.	IE	SHEET 2 OF 5	
APPROVED	[Signature]	TITLE	SCALE
DE APPR.	[Signature]	EMERGENCY ESCAPE LADDER	NTS
DATE	12.04.02	<small>COPYRIGHT © 2012 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.</small>	

83120



D4617-1 RAIL



D4617-3 STEP

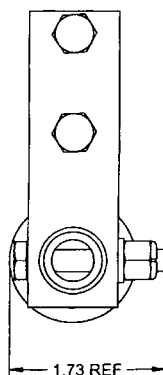
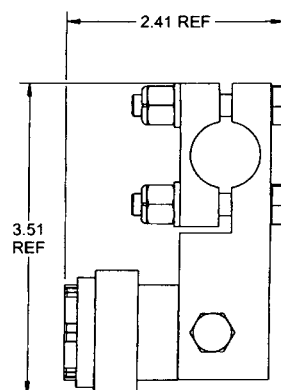
NOTES:

- 1) MATERIAL: AISI 4130N STEEL TUBING PER MIL-T6736
OR AMS6371, 6360, 6361, 6362, 6373, 6374
REF DART SPEC M4130NT0.750W.035
- 2) FINISH: N/A
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
- 6) IDENTIFICATION: PER DART QSI044 6.6
- 7) WEIGHT: D4617-1 1.7lbs
D4617-3 0.17lbs

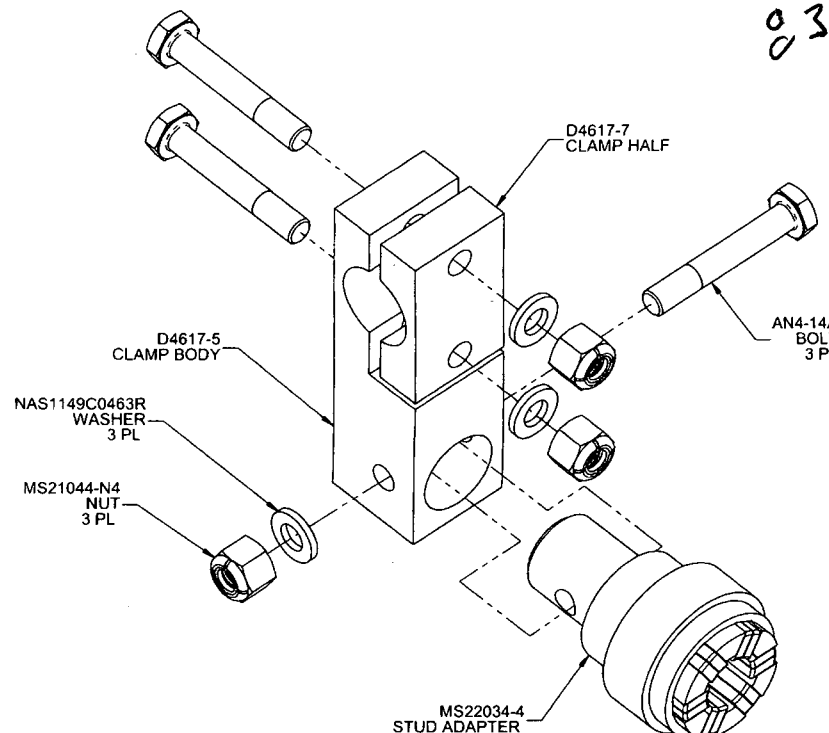
RELEASED
2012-04-18

DESIGN	RP	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
DRAWN	RP		
CHECKED	A.P.	DRAWING NO. D4617	REV. A
MFG. APPR.			SHEET 3 OF 5
APPROVED		TITLE	SCALE
DE APPR.		EMERGENCY ESCAPE LADDER	NTS
DATE	12.04.02	<small>COPYRIGHT © 2012 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR DISSEMINATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.</small>	

ITEM	QTY	P/N	DESCRIPTION
	X	D4617-045	CLAMP ASSEMBLY
1	1	D4617-5	CLAMP BODY
2	1	D4617-7	CLAMP HALF
3	3	AN4-14A	BOLT
4	3	MS21044-N4	NUT
5	1	MS22034-4	STUD ADAPTER
6	3	NAS1149C0463R	WASHER



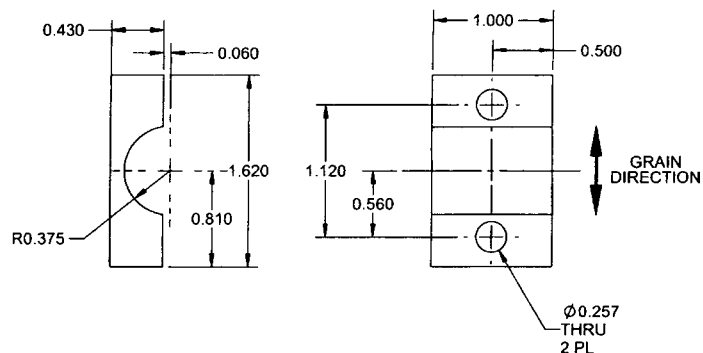
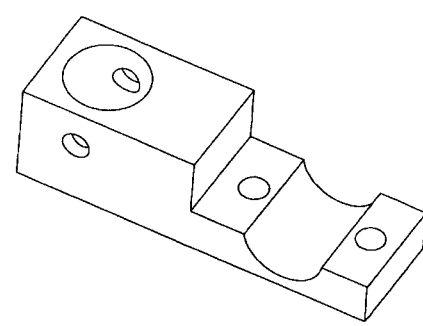
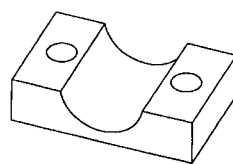
D4617-045 CLAMP ASSY



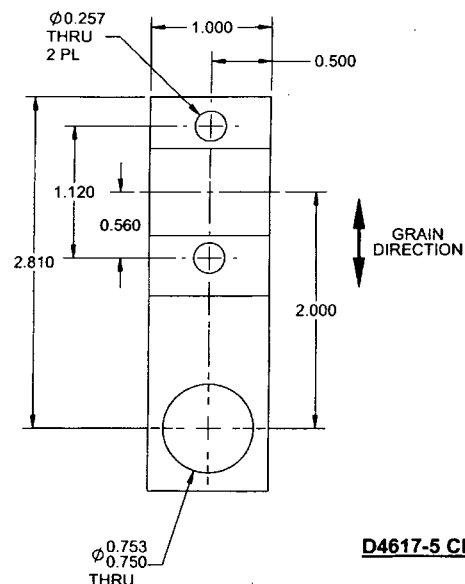
- NOTES:**
 1) MATERIAL: N/A
 2) FINISH: N/A
 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
 4) UNITS: INCHES UNLESS OTHERWISE NOTED
 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
 6) IDENTIFICATION: PER DART QSI044 6.6
 7) WEIGHT: 0.5 lbs

DESIGN	RP	DART AEROSPACE LTD	
DRAWN	RP	HAWKESBURY, ONTARIO, CANADA	
CHECKED	D.P.	DRAWING NO.	REV. A
MFG. APPR.	E.P.	D4617	SHEET 4 OF 5
APPROVED	[Signature]	TITLE	SCALE
DE APPR.	[Signature]	EMERGENCY ESCAPE LADDER	NTS
DATE	12.04.02	<small>COPYRIGHT © 2012 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR REPRODUCED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.</small>	

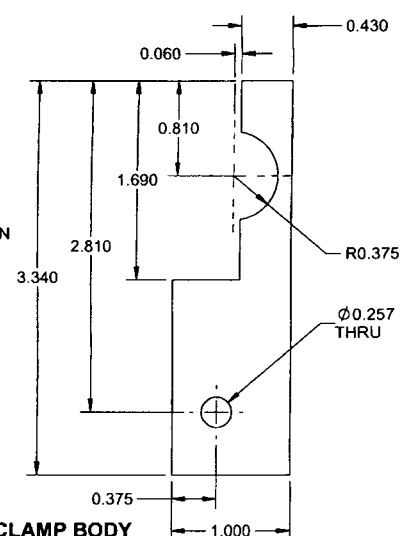
83120



D4617-7 CLAMP HALF



D4617-5 CLAMP BODY



NOTES:

- 1) MATERIAL: 6061-T6/T651/T6510/T6511/T62 ALUMINUM BAR
PER QQ-A-225/8 OR AMS-QQ-A-225/8 OR
AMS 4117/4128/4115/4116 OR QQ-A-200/8
OR ASTM B211 OR ASTM B221
REF DART SPEC M6061T6B
- 2) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
- 6) IDENTIFICATION: PER DART QSI 044 6.6 OR 6.7
- 7) WEIGHT: D4617-5 0.17 lbs
D4617-7 0.05 lbs
- 8) POSSIBLE SUPPLIER: D4617-5: EAGLE P/N 212-110-06
D4617-7: EAGLE P/N 212-110-07

RELEASED
2012-04-10

DESIGN	RP	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
DRAWN	RP		
CHECKED		DRAWING NO.	REV. A
MFG. APPR.		D4617	SHEET 5 OF 5
APPROVED		TITLE	SCALE
DE APPR.		EMERGENCY ESCAPE LADDER	NTS
DATE	12.04.02	COPYRIGHT © 2012 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD	

Eric Downing

From: David Duval <dduval@dartaero.com>
Sent: May 1, 2012 8:42 AM
To: Eric Downing
Subject: FW: Emergency Escape Ladder -update

From: David Shepherd [<mailto:dshepherd@dartaero.com>]
Sent: Monday, April 30, 2012 3:40 PM
To: 'Mike Petsche'; 'Roger Pilon'
Cc: 'David Duval'; 'Linda Lacelle'
Subject: RE: Emergency Escape Ladder -update

Yes ... I am OK with reworking the ladder(s) in process so they fit.

David

From: Mike Petsche [<mailto:mpetsche@dartaero.com>]
Sent: April-30-12 9:44 AM
To: 'Roger Pilon'
Cc: 'David Shepherd'; 'David Duval'; 'Linda Lacelle'
Subject: RE: Emergency Escape Ladder -update

In the absence of Chris, I can only offer my opinion. But since the ladder is not actually keeping the aircraft aloft, (and it's steel), I'd be ok with reworking it.

But David would have to make the official call.

From: Roger Pilon [<mailto:rpilon@dartaero.com>]
Sent: Monday, April 30, 2012 11:35 AM
To: Mike Petsche
Cc: David Shepherd; David Duval; Linda Lacelle
Subject: Emergency Escape Ladder -update

Just wanted to keep you in the loop on this one.

I was walking by when Russ was fit-checking the first one built, this morning. I therefore stopped by to give him a hand and to see how it would fit.

It does NOT. The Clamp Assemblies at the top and bottom of the ladder were too far apart.

We established that the Clamp Assemblies themselves were ok by trying them on an older ladder which we still have in our possession.

Looking at the older ladder side by side with this new one we've just built, you couldn't really see the difference.

However.. when we measured the overall length of each one, in a straight line, as measured from outside the top and bottom rungs, there was a good 1/2" difference.

We will therefore need to add a control dimension to the drawing to ensure this doesn't happen again.

I suggest just bringing in the top and bottom rungs.

The weldment jig will also have to be adjusted accordingly.

Should I proceed with this change on the drawing ?

I know we have sales and Linda was actually hoping to ship one today. Not sure that's going to happen now.

Would it be acceptable to rework this first unit ? (ie. Cut off the top and bottom rungs, grind as required, re-weld new top and bottom rungs further in and re-paint)

Your thoughts ?

Roger Pilon

Mechanical Designer

DART
aerospace

1270 Aberdeen Street

Hawkesbury, Ontario

CANADA K6A 1K7

(613) 632 5200 x 229

rpilon@dartaero.com

<http://www.dartaero.com/>